SUPPLEMENTARY DATA

Supplementary Table 1. Characteristics of people included in, and excluded from, analysis.

	INCLUDED		NOT INCLUDED[1]	
	MEN *n* = 58,372	**WOMEN** *n* = 48,268	**MEN** *n* = 70,585	**WOMEN** *n* = 63,344
Total cholesterol mean (SD) [N]	5.11 (1.44) [46,853]	5.45 (1.42) [38,239]	4.96 (1.42) [15,470]	5.31 (1.51) [13,640]
HDL mean (SD) [N]	1.15 (0.33) [32,545]	1.30 (0.37) [26,494]	1.17 (0.39) [9,500]	1.32 (0.40) [8,508]
HbA1c (%) mean (SD) [N]	8.04 (2.03) [48,487]	7.96 (2.00) [40,117]	7.89 (2.00) [17,064]	7.81 (1.94) [15,447]
Sys. BP (mmHg) mean (SD) [N]	140.59 (19.69) [54,424]	143.00 (20.90) [44,968]	140.21 (20.81) [21,508]	142.69 (21.82) [19,389]
Dia. BP (mmHg) mean (SD) [N]	82.15 (11.53) [54,446]	81.32 (11.35) [44,976]	81.43 (12.62) [21,528]	80.85 (12.82) [19,401]
Age(yrs)[2] mean (SD) [N]	59.5 (11.9) [58,372]	62.3 (12.5) [48,268]	59.4 (12.9) [70,585]	63.0 (13.9) [63,344]
Smoking status[3] % current [N] % former [N] % never [N]	 25.0 [14,571] 39.5 [23,036] 35.6 [20,765]	 23.3 [11,223] 29.3 [14,155] 47.4 [22,890]	 25.7 [15,519] 36.7 [22,127] 37.6 [22,722]	 22.1 [11,473] 26.6 [13,835] 51.3 [26,634]
SIMD % Q1 [N] % Q2 [N] % Q3 [N] % Q4 [N] % Q5 [N]	 16.3 [9,484] 18.9 [10,950] 20.0 [11,619] 22.4 [12,291] 22.4 [13,006]	 13.9 [6,694] 17.0 [8,173] 19.9 [9,550] 23.9 [11,455] 25.3 [12,148]	 14.8 [10,350] 19.3 [13,481] 21.7 [15,181] 22.1 [15,449] 22.2 [15,779]	 12.4 [7,780] 17.5 [10,992] 20.8 [13,081] 23.7 [14,866] 25.7 [16,118]

[1] Sex not recorded for 79 patients

[2] At time of diagnosis with diabetes.

[3] Within one year of diagnosis with diabetes. This differs from the representation of smoking status featured in the regression models; the latter used the measurement of smoking status which was closest in time to the date on which the index BMI measurement was recorded.

Supplementary Table 2. Age at diagnosis with diabetes and socioeconomic status, by inclusion group.

	excluded: no BMI data		excluded: BMI outside one year from diagnosis T2DM		included in analysis	
	MEN	**WOMEN**	**MEN**	**WOMEN**	**MEN**	**WOMEN**
Age mean (SD)	67.3 (12.8)	72.6 (12.5)	57.3 (12.2)	60.2 (13.0)	59.5 (11.9)	62.3 (12.5)
SIMD % Q1 % Q2 % Q3 % Q4 % Q5	 12.9 20.5 22.9 20.6 23.2	 13.2 19.5 21.0 21.6 24.7	 15.4 19.3 21.7 22.0 21.6	 12.2 17.1 21.0 24.1 25.5	 16.3 18.9 20.0 22.4 22.4	 13.9 17.0 19.9 23.9 25.3

SUPPLEMENTARY DATA

Supplementary Table 3. Hazard ratio estimates for effect of BMI on all-cause mortality; stratified by smoking status. Estimates are adjusted for age at BMI determination. Deaths within two years of BMI determination are excluded. Numbers of patients (deaths) are: Men, never smoked – 20,765 (1,674); Men, current / former smokers – 37,607 (3,598); Women, never smoked – 22,890 (1,894); Women, current / former smokers – 25,378 (2,465).

	NEVER SMOKED		CURRENT / FORMER SMOKERS	
	MEN	WOMEN	MEN	WOMEN
BMI (kg / m^2)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
20 to < 25	1.10 (0.96 to 1.25)	1.21 (1.07 to 1.37)	1.28 (1.17 to 1.40)	1.41 (1.26 to 1.57)
25 to < 30	1.00	1.00	1.00	1.00
30 to < 35	0.98 (0.87 to 1.10)	1.07 (0.95 to 1.21)	0.96 (0.89 to 1.04)	1.01 (0.91 to 1.13)
35 to < 40	1.30 (1.08 to 1.56)	1.14 (0.98 to 1.33)	1.08 (0.95 to 1.22)	1.06 (0.93 to 1.22)
40 to < 45	1.89 (1.42 to 2.51)	1.38 (1.11 to 1.72)	1.12 (0.89 to 1.42)	1.31 (1.09 to 1.59)
45 to < 50	1.09 (0.56 to 2.10)	1.94 (1.40 to 2.70)	2.08 (1.44 to 2.99)	1.72 (1.30 to 2.28)

Supplementary Table 4. Hazard ratio estimates for effect of BMI (increase of 5 kg / m^2 from 20-<30kg/m^2 or from 30-<50 kg/m^2 according to stratum) on mortality from specific causes, spilt by sex, by numbers of years from BMI determination of excluded deaths. Estimates are adjusted for age at BMI recording and for smoking status (never *vs.* current / former). Numbers of patients and deaths are also given for each sex.

exclusion period	BMI category (kg / m^2)	MEN HR (95% CI)	WOMEN HR (95% CI)	MEN no. of patients (deaths)	WOMEN no. of patients (deaths)
0 years	20 to < 25	1.38 (1.29 to 1.46)	1.39 (1.30 to 1.49)	7,210 (1,546)	6,321 (1,332)
	25 to < 30	1.00	1.00	23,026 (3,155)	14,885 (2,018)
	30 to < 35	0.94 (0.89 to 1.00)	1.00 (0.94 to 1.07)	19,524 (1,883)	14,334 (1,462)
	35 to < 40	1.10 (1.00 to 1.20	1.06 (0.98 to 1.16)	7,620 (595)	8,660 (689)
	40 to < 45	1.29 (1.11 to 1.51)	1.19 (1.05 to 1.35)	2,562 (177)	4,146 (282)
	45 to < 50	1.67 (1.29 to 2.18)	1.70 (1.41 to 2.04)	857 (58)	1,678 (123)
2 years	20 to < 25	1.22 (1.13 to 1.32)	1.32 (1.22 to 1.44)	6,586 (988)	5,863 (921)
	25 to < 30	1.00	1.00	22,057 (2,303)	14,293 (1,498)
	30 to < 35	0.97 (0.91 to 1.04)	1.04 (0.96 to 1.12)	18,962 (1,385)	13,941 (1,111)
	35 to < 40	1.14 (1.03 to 1.27)	1.10 (0.99 to 1.21)	7,427 (430)	8,454 (510)
	40 to < 45	1.34 (1.12 to 1.61)	1.34 (1.17 to 1.55)	2,506 (127)	4,078 (227)
	45 to < 50	1.70 (1.24 to 2.34)	1.81 (1.46 to 2.24)	834 (39)	1,639 (92)
5 years	20 to < 25	1.13 (1.02 to 1.26)	1.27 (1.13 to 1.43)	5,879 (457)	5,216 (432)
	25 to < 30	1.00	1.00	20,578 (1,151)	13,316 (757)
	30 to < 35	1.02 (0.92 to 1.12)	1.04 (0.93 to 1.16)	18,037 (692)	13,206 (559)
	35 to < 40	1.24 (1.07 to 1.44)	1.11 (0.96 to 1.29)	7,136 (211)	8,113 (251)
	40 to < 45	1.18 (0.89 to 1.56)	1.40 (1.15 to 1.71)	2,405 (52)	3,933 (115)
	45 to < 50	1.79 (1.12 to 2.85)	1.97 (1.47 to 2.65)	806 (18)	1,576 (48)

SUPPLEMENTARY DATA

Supplementary Table 5. Hazard ratio estimates for effect of BMI (increase of 5 kg / m^2) on mortality from any cause. Estimates are adjusted for additional predictors shown in leftmost column (age at BMI determination; smoking status [never *vs.* current / former]; SIMD quintile; HbA1c measured within one year of diagnosis with diabetes; and year of diagnosis). Deaths within two years of BMI determination are excluded.

| predictors | MEN | | | |
| | 20 to < 30 kg / m^2 (n = 28,643) | | 30 to < 50 kg / m^2 (n = 29,729) | |
	deaths	HR (95% CI)	deaths	HR (95% CI)
BMI / age / smoking	3,291	0.82 (0.76 to 0.88)	1,981	1.21 (1.14 to 1.29)
BMI / age / smoking / SIMD quintile	3,268	0.81 (0.75 to 0.88)	1,970	1.20 (1.13 to 1.28)
BMI / age / smoking / SIMD quintile / HbA1c	2,129	0.81 (0.74 to 0.89)	1,343	1.20 (1.11 to 1.29)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis	2,129	0.81 (0.74 to 0.89)	1,343	1.20 (1.11 to 1.29)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis / total cholesterol / HDL / systolic BP	1,013	0.84 (0.73 to 0.97)	706	1.17 (1.05 to 1.30)
	WOMEN			
	20 to < 30 kg / m^2 (n = 20,156)		30 to < 50 kg / m^2 (n = 28,112)	
BMI / age / smoking	2,419	0.77 (0.71 to 0.84)	1,940	1.16 (1.10 to 1.22)
BMI / age / smoking / SIMD quintile	2,407	0.76 (0.70 to 0.82)	1,920	1.16 (1.10 to 1.22)
BMI / age / smoking / SIMD quintile / HbA1c	1,560	0.77 (0.69 to 0.85)	1,242	1.14 (1.07 to 1.22)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis	1,560	0.77 (0.69 to 0.85)	1,242	1.14 (1.07 to 1.22)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis / total cholesterol / HDL / systolic BP	734	0.78 (0.67 to 0.90)	595	1.22 (1.11 to 1.34)

SUPPLEMENTARY DATA

Supplementary Table 6. *(revised - all models based on a consistent subset of patients with data for all variables)*: Hazard ratio estimates for effect of BMI (increase of 5 kg / m^2) on mortality from any cause. Estimates are adjusted for additional predictors shown in leftmost column (age at BMI determination; smoking status [never *vs.* current / former]; SIMD quintile; HbA1c measured within one year of diagnosis with diabetes; and year of diagnosis). Deaths within two years of BMI determination are excluded.

	MEN			
	20 to < 30 kg / m^2 (*n* = 14,869)		**30 to < 50 kg / m^2 (*n* = 16,120)**	
predictors	**deaths**	**HR (95% CI)**	**deaths**	**HR (95% CI)**
BMI / age / smoking	1,013	0.86 (0.75 to 0.99)	706	1.16 (1.04 to 1.29)
BMI / age / smoking / SIMD quintile	1,013	0.85 (0.74 to 0.98)	706	1.15 (1.03 to 1.28)
BMI / age / smoking / SIMD quintile / HbA1c	1,013	0.85 (0.74 to 0.98)	706	1.15 (1.03 to 1.28)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis	1,013	0.85 (0.74 to 0.98)	706	1.15 (1.03 to 1.28)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis / total cholesterol / HDL / systolic BP	1,013	0.84 (0.73 to 0.97)	706	1.17 (1.05 to 1.30)
	WOMEN			
	20 to < 30 kg / m^2 (*n* = 10,327)		**30 to < 50 kg / m^2 (*n* = 14,993)**	
BMI / age / smoking	734	0.79 (0.68 to 0.91)	595	1.22 (1.11 to 1.34)
BMI / age / smoking / SIMD quintile	734	0.78 (0.67 to 0.90)	595	1.22 (1.11 to 1.34)
BMI / age / smoking / SIMD quintile / HbA1c	734	0.78 (0.67 to 0.90)	595	1.22 (1.11 to 1.34)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis	734	0.78 (0.67 to 0.90)	595	1.22 (1.11 to 1.34)
BMI / age / smoking / SIMD quintile / HbA1c / year of diagnosis / total cholesterol / HDL / systolic BP	734	0.78 (0.67 to 0.90)	595	1.22 (1.11 to 1.34)

SUPPLEMENTARY DATA

Supplementary Figure 1. Case Flow

[START]

N = 240,648 people with Type 2 diabetes and valid date of diagnosis

exclude 16,038 with no BMI data ➔ N = 224,610

exclude 11,510 who die within 2 years of index BMI measurement ➔ N = 213,100

exclude 4,992 with index BMI outside range >= 20 and < 50 ➔ N = 208,108

exclude 94,250 for whom index BMI not within 1 yr of diabetes diagnosis ➔ N = 113,858
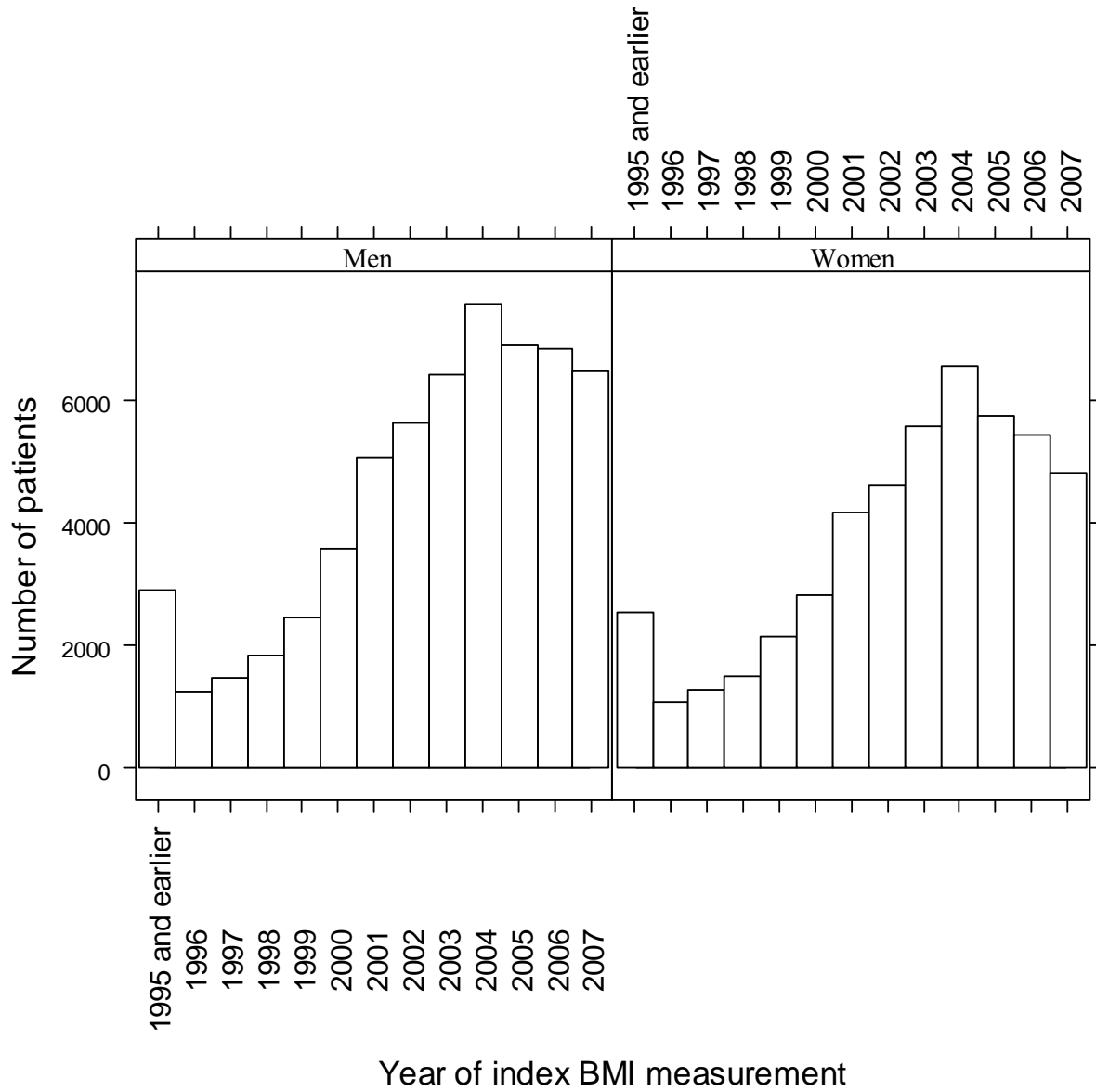
exclude 5,384 for whom index BMI taken after 31/12/2007 ➔ N = 108,474

exclude 22 due to miscellaneous date anomalies ➔ N = 108,452

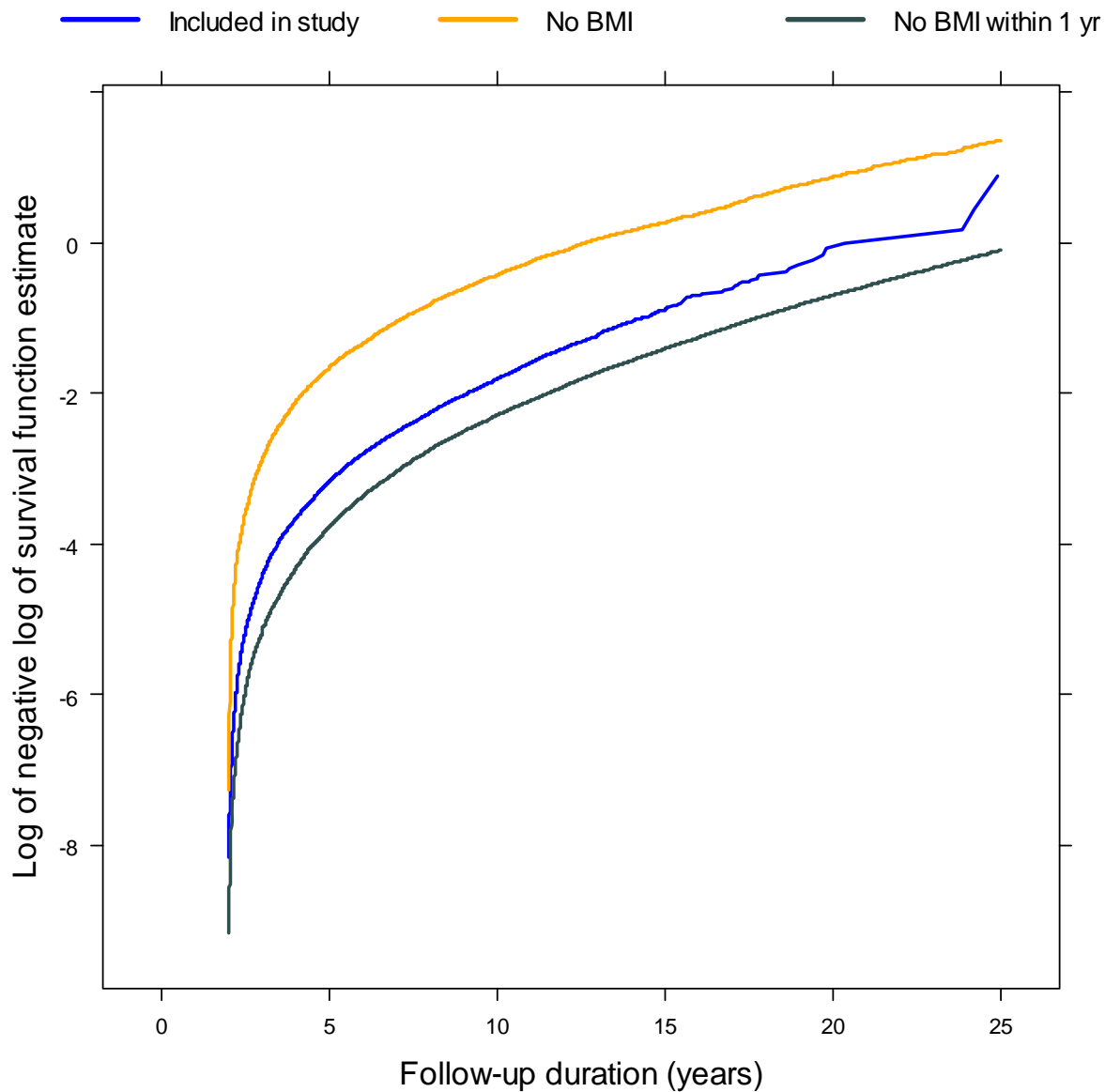exclude 1,812 due to no smoking status ➔ N = 106,640

[END]

Supplementary Figure 2. Distribution of index BMI measurements by year of recording (years prior to 1996 are combined into a single group).

Supplementary Figure 3a. Log of the negative log of the survival function plotted against time, for three inclusion status groups - MEN
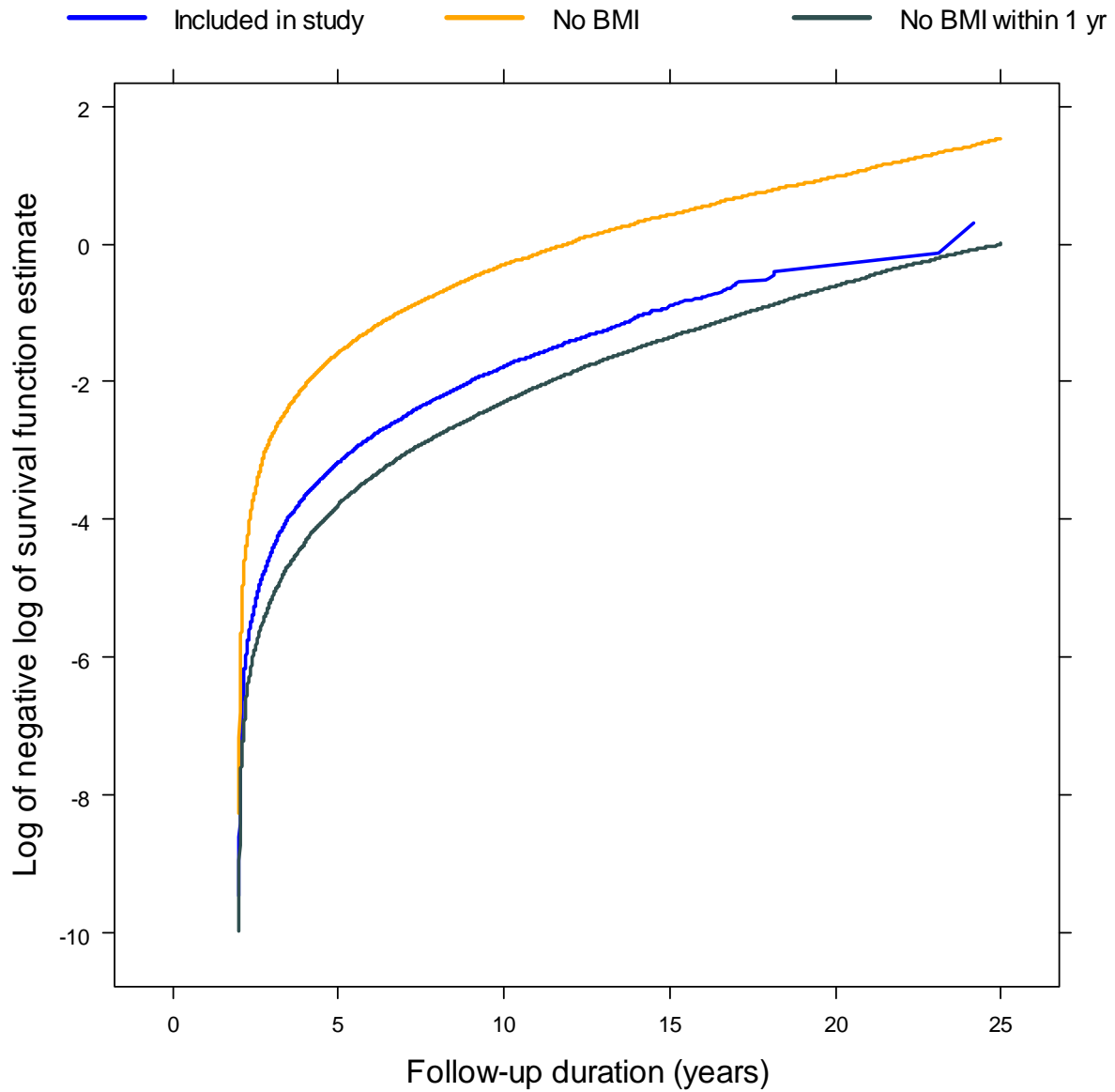
SUPPLEMENTARY DATA

Supplementary Figure 3b. Log of the negative log of the survival function plotted against time, for three inclusion status groups - WOMEN

SUPPLEMENTARY DATA

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